Archived Editions (COVID-19 Genomics and Precision Public Health Weekly Update)

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COVID-19 Genomics and Precision Public Health Weekly Update Content

Pathogen and Human Genomics Studies

- Elicitation of potent neutralizing antibody responses by designed protein nanoparticle vaccines for SARS-CoV-2 (/PHGKB/phgHome.action?action=forward&dbsource=covUpdate&id=335)
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  Two-component nanoparticle platform enabled rapid generation of SARS-CoV-2 vaccines. The RBD-nanoparticle vaccines elicit potent neutralizing antibody responses. Nanoparticle vaccine-elicited antibodies target multiple non-overlapping epitopes. • The lead nanoparticle vaccine candidate is being manufactured for clinical trials.
- Wastewater Analysis of SARS-CoV-2 as a Predictive Metric of Positivity Rate for a Major Metropolis (/PHGKB/phgHome.action?action=forward&dbsource=covUpdate&id=343)
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  We report wastewater viral RNA levels of SARS-CoV-2 in a major metropolis serving over 3.6 million people geographically spread over 39 distinct sampling sites. Viral RNA levels were followed weekly for 22 weeks, both before, during, and after a major surge in cases, and simultaneously by two independent laboratories. We found SARS-CoV-2 RNA wastewater levels were a strong predictive indicator of trends in the nasal positivity rate two-weeks in advance.
- COVID-19 Wastewater Epidemiology: A Model to Estimate Infected Populations (/PHGKB/phgHome.action?action=forward&dbsource=covUpdate&id=346)
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  Composite wastewater samples were collected from three sewersheds and tested for SARS-CoV-2 RNA. A Susceptible-Exposed-Infectious-Removed (SEIR) model based on mass rate of SARS-CoV-2 RNA in the wastewater was developed to predict the number of infected individuals. Predictions were compared to confirmed cases identified by the South Carolina Department of Health and Environmental Control for the same time period and geographic area.
- Pooled testing for SARS-CoV-2 could provide the solution to UK's testing strategy (/PHGKB/phgHome.action?action=forward&dbsource=covUpdate&id=352)

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Pooled sampling of what is essentially asymptomatic swabs would allow rolling surveillance programmes in schools, care homes, universities and colleges, and high risk factory settings without having a major impact on the daily covid-19 test capacity.

- Trends of mutation accumulation across global SARS-CoV-2 genomes: Implications for the evolution of the novel coronavirus. (/PHGKB/phgHome.action?action=forward&dbsource=covUpdate&id=357)
  Roy Chayan et al. Genomics 2020 Nov

  Phylogeny of 4618 spatiotemporally-representative genomes revealed that entities belonging to the early lineages are mostly spread over Asian countries, including India, whereas the recently-derived lineages are more globally distributed. Of the total 20,163 instances of polymorphism detected across global genomes, 12,594 and 7569 involved transitions and transversions, predominated by cytidine-to-uridine and guanosine-to-uridine conversions, respectively.

Non-Genomics Precision Health Studies

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News, Reviews and Commentaries

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